Two Fossil Bees.

By T. D. A. Cockerell.

The numerous bees from Baltic amber which I have recently had occasion to study, all belong to extinct genera. In this they differ from some of the other amber Hymenoptera, which belong to genera still living, e. g., *Pison, Crabro* and *Hadronotus*. The bees are believed to have arisen from the fossorial wasps, and no doubt many wasp-genera are of great antiquity. The amber insects are of Oligocene age and are *possibly* as much older than those of Florissant, as the latter are than those now living. The Florissant bees include both living and extinct genera; the latter not ancestral, apparently, to any now existing. During Miocene times, this country had a warmer climate than at present, and doubtless supported a larger insect fauna. Later, especially at the time of glaciation, the fauna must have been greatly reduced, and it appears that many genera became extinct;—some entirely so, others (as the tsetse fly) surviving on other continents. Even the warm period was probably fatal to many old American genera, because it permitted the immigration of numerous old-world forms via Alaska, and thus set up injurious competition. The details of the great Tertiary biological drama are gradually being made out through a study of the fossils, and it is becoming increasingly evident that these must be considered in connection with the living genera, in order to understand the one or the other series. Most students of recent insects have heretofore ignored the results of the palæoentomology, but it is hoped that in the future they will gladly utilize the significant facts available from this source.

PELANDRENA gen. nov.

Allied to *Andrena*, but with only two submarginal cells in the anterior wings; second submarginal broad, much contracted apically, receiving the first recurrent nervure some distance from its base, and the second at its apex; lower section of basal nervure very much longer than upper, practically straight, except at the lower (basal) end, where it is bent

to meet the transversomedial, the latter being oblique, with its lower end more apical; stigma large; marginal cell ending very obtusely, not in a point on costa, but not truncate; venation of hind wings perfectly normal for the *Andrena* series; transversomedial nervure moderately oblique.

Pelandrena reducta sp. nov.

♀. Robust, of ordinary form; length about 7 mm., anterior wing about 4 mm.; head and thorax black or nearly; abdomen and legs reddish brown; wings hyaline, becoming dusky on apical half; nervures and stigma rather light reddish brown; antennæ ordinary, flagellum 170 u. thick; hind legs with a copious and dense scopa. The following measurements of the anterior wing are in micromillimeters.

Depth of stigma 221; length of basal nervure on first discoidal (not allowing for curve) 595; length of marginal cell 1190, its breadth (depth) 340; length of first submarginal (from lower basal to upper apical corners) 714; second submarginal on marginal 357, on first discoidal 153, on third discoidal (not allowing for gentle outward curve) 442, and its outer side 187; first discoidal on third 442. Second recurrent nervure strongly bowed outward, but without any double curve.

Hab.—Miocene shales of Florissant, Colorado, Station 4 (*W. P. Cockerell.*) In my table of Florissant bees (Bull.-Mus. Comp. Zool., 1906) this runs to *Libellulapis*, but differs entirely in the shape of the second submarginal cell.

Halictus miocenicus sp. nov.

♀. Length 7 mm.; anterior wing about 4½; width of abdomen about 2 3-5 mm.; head and thorax black; abdomen and legs ferruginous; wings hyaline, slightly reddish, nervures and stigma pale ferruginous; antennæ normal, the flagellum about 2 1-5 mm. long. Head with very dense rather large punctures, so as to have a finely cancellate appearance; eyes prominent, apparently shallowly but broadly emarginate on inner side; metathorax finely granular, the sculpture finer than that of head; hind tibia and tarsi; with a very copious scopa. Venation normal for *Halictus;* second submarginal cell very narrow, receiving the first recurrent nervure near its end; third transverso-cubital without any double curve, third submarginal cell receiving second recurrent nervure somewhat beyond the beginning of its last third; stigma large; marginal cell ending in a point on costa; lower section of basal nervure very strongly curved. Venation of hind wings perfectly normal for *Halictus.*

The following measurements of the anterior wing are in micromillimeters; depth of stigma, 238; length of marginal cell 1377, its depth

357; lower section of basal nervure (not allowing for curve) 595; basal nervure apicad of transverso-medial 51; basal side of first submarginal cell 187, its lower side 731, its diameter measured from lower basal to upper apical corners 816; transverse (radial) diameter of second submarginal cell 187, its side on first discoidal 170; lower side of third submarginal 425; insertion of first to insertion of second recurrent nervures 374.

Hab.—Miocene shales of Florissant, 1908. In my table of Florissant bees (Bull-Mus. Comp. Zool. 1906) this runs to *Halictus florissantellus*, from which it differs by the broader, reddish abdomen; the light reddish nervures and stigma; the transversomedial separated from the basal nervure by a short interval, etc.

Two New Species of Coccinellidae (Coleoptera).

By F. W. Nunenmacher, Piedmont, Calif.

While working over some material collected near Goldfield, Nev., during the last year, I found two Coccinellidæ which I consider belong to undescribed species. I therefore take this opportunity to make them known.

Coccinella vandykei n. sp.

Oval, strongly convex. Head, black, finely punctate, with two yellow spots on vertex. Thorax, black, shining, a little more coarsely punctured than the head, and with a quadrate yellow spot at each anterior angle. Elytra, bright red, finely but thickly punctured, and together marked with seven black spots. These latter are arranged as follows: A common large scutellar spot, and on each elytron, a small median one near the margin, a larger discoidal close to the suture, and a third large spot, more oblong than round or oval, placed subapically and closer to the margin than the suture. Under side black, the mesosternal epimeron and the metasternal epimeron yellow, moderately coarsely punctured throughout. L. .18 to .20 inch; w. .14 to .16.

Scarce, on sage brush at 6600 feet elevation Goldfield, Nev., VI, 29, '07.

I consider this species a form intermediate between *C. 9-notata* and *C. californica*, resembling the first most with regard to the elytral markings, and the latter most with regard to the markings of the head and thorax. The scutellar spot, with regard to its size and form, also more closely resembles that on *C. californica* than that on *C. 9-notata*.